



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

D350-636-023
Job Sheet 188942



Part No: D350-636-023

Job Qty: 1 ea

Part Name: AS350/355 - Skidtube - Standard w/ Heavy-Duty Wearplates - LH



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 1/16/19

Job Tracking No:

Due Date: 2/15/19

Created By: Jesse White

Type: Stock

Description:

Note: D4168-051 REV.C, IIN-D350-636 REV.K IPP REV.A 18.11.29 NEW ISSUE DD VERF:JFS

Ship Via:

Bill of Materials

Entered: _____ Date: _____



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date: _____ Sequence #: _____ Description Work Order Deviation Root Cause Options Manufacturing Process Equipment/Tooling Material Product Improvement Process Improvement Human Factors		Off-Affected: _____		MRB (QSI042)	
		Disposition		Completed By	
		DART AEROSPACE Container No: S146422 Job No: 188942 Serial No/Batch: S146422 Revision: C/K Inspector: Exp Date: Instructions: TC STC SH99 - 7 Issue 2a-6Aa, S14a SR00646S1 Dart Aerospace Ltd. 1270 Aberdeen Street Hawkesbury, ON K6A 1K7 CANADA TEL: 1 613 832-5200 Email: sales@dartaero.com www.dartaerospace.com		Lead hand / Supervisor	
				FAULT CATEGORY	
Handling/Presservation ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐		Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐		Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread ☐	
Other/Details: _____					

Job Routing									
Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea	2/15/19	2/15/19	0.00	0.00	Start Up Skid tubes-1		BE
110	Skid tubes	1 pcs	2/15/19	2/15/19	0.00	5.25	Skid tubes-1		BEAS
120	QC	1 pcs	2/15/19	2/15/19	0.00	0.00	QC10		38 DAS
130	QC	1 pcs	2/15/19	2/15/19	0.00	0.00	QC5		9-86 38
140	HandFinish	1 pcs	2/15/19	2/15/19	0.00	0.99	HandFinish1		D.R 19/01/28
150	QC	1 pcs	2/15/19	2/15/19	0.00	0.00	QC7-2		MLG
160	Skid tubes	1 pcs	2/15/19	2/15/19	0.00	5.25	Skid tubes-1		14 BRTF
170	QC	1 pcs	2/15/19	2/15/19	0.00	0.00	QC10		PD 14-03-13
180	QC	1 pcs	2/15/19	2/15/19	0.00	0.00	QC5		PD 18-03-13
190	HandFinish	1 pcs	2/15/19	2/15/19	0.00	0.99	HandFinish2		D.R 19/03/14
200	SprayPaint	1 pcs	2/15/19	2/15/19	0.00	0.91	Spray Paint		RD 19-3-15
205	Outsource	1 pcs	2/15/19	2/15/19			ATE003-VC	5	UJA
210	QC	1 pcs	2/15/19	2/15/19	0.00	0.00	QC14		SL 14-3-25
230	HandFinish	1 pcs	2/15/19	2/15/19	0.00	0.99	HandFinish4		ML 14-04-25
240	QC	1 pcs	2/15/19	2/15/19	0.00	0.00	QC5		MAY 03 2019 68 DAS
250	Packaging	1 pcs	2/15/19	2/15/19	0.00	0.00	Packaging1-3		MAY 09 2019 9-89 DAS
260	QC	1 pcs	2/15/19	2/15/19	0.00	0.00	QC4		MAY 09 2019 46 DAS
270	Packaging	1 pcs	2/15/19	2/15/19	0.00	0.00	Packaging3-1		MAY 09 2019 48 DAS
275	DC	1 pcs	2/15/19	2/15/19	0.00	0.00	DC		MAY 09 2019 9-89 DAS
280	QC21-FG	1 Ea	2/15/19	2/15/19	0.00	0.00	QC21		MAY 09 2019 21 DAS

Part Op 110 - 1- Pick D2600-3 Bent 2- Deburr FWD and AFT ends, remove bending marks. Scribe batch# inside AFT end per dwg
 Descriptions: D4168-1 3- Drill pilot holes for blade fitting bolt holes using DT8983. Start with 3/16", then open to 0.500" using center drill

then ream holes using 0.500" reamer. PIN first side. Repeat process on second side. ***ENSURE PROPER POSITIONING FWD BEND MUST BE FACING UP WHEN DRILLING FIRST SIDE*** Drill pilot holes as per Dwg D4168 sheet 4 (D4168-5 details). Drill using drill Jig DT8150 & DT8863A for first side only DT8863B for second side 4- Locate DT8330 off of blade fitting bolt holes and drill pilot holes for blade fitting, section DE-DE. Open to 0.500" using hole saw. VERIFY AND RECORD FWD BEND ANGLE. 5- Drill tow ring hole using DT9616 detail "DA" 6- Drill most FWD wearplate hole using DT9678 locating off of 66.54" hole. 7- Open up holes of Detail DA to 0.297" (total of 2 holes per side) and .201" (total of 1 hole per side using DT9616) 8- Weld D2744 Cap as per Dwg D4168 and QSI 004. Fill grooves in bend left from bending as per QSI 004 A/R Aluminum Rod batch: 138989 9- Grind welds flush as per Dwg D4168
 160 - 1-Open up holes using hole saw of Detail DB and ground handling section EN-EN to 0.625" (total of 8 holes per side) as per dwg D4168. Open wearplate holes to size as per dwg (4 holes per sides), section EP-EP 4-Chamfer holes of Detail DB, ground handling section AL-AL per dwg D4168 (welding instructions on sheet 8) 5-Deburr and blow out all chips from inside of tube 6- Prepare tube for welding, remove alodine as required. 7-Bond web D2739 in place as per QSI 015, let cure for 12hrs. A/R Sikaflex-291 batch: M136984 exp. date: 03/07/19 ***ATTN: USE I-BEAM LOCATION AID (BLADE FITTING)*** 8- Weld spacers D2743 as per dwg D4168 and D4170-1 & QSI004 (welding instructions on sheet) A/R Aluminum Rod batch: 138989 10-Grind welds flush as per Dwg D4168 11-Spot face ground handling holes section (total of 4 places per side) as per dwg D4168, section EN-EN 12- C'bore section CG-CG. ADJUST TOOLING AS REQUIRED. VERF BY: 13- Deburr holes, ensure tube is free of all scratches before sending to paint. *****

180 - ***VERIFY C'BOARD IS GOOD***

190 - Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.

200 - 1- PRIME AS PER DWG AND QSI 005 4.2.1.3.3 PRIMER PRC DESOTO 515X349 BATCH: 5152590

2- PAINT WHITE AS PER DWG AND QSI 005 4.2 PAINT BATCH: 5146086

210 - Inspect for foreign object per QSI 024

230 - 1- Install inserts as per Dwg D4168 2-Inspect for Foreign Objects 3-Install blade fitting D3488-3, wearshoes and ground handling hardware as per dwg D4168 SIKA FLEX 241 BATCH: 5163445 EXP DATE: 19-1 5- Coat all exposed fasteners with "LPS Procyon" batch: M132698

250 - If making a D350-636-215 pick kit will only requires: 1 X AN3C37A 1 X AN3C34A 1 X AN3C42A

260 - *****ensure antiseize is on AN8C21A bolts*****

270 - Identify and pack for shipping as per PPPD350-636-023 Location :FG071

275 - record fwd angle: 89.9 Photocopy blue file and type labels per PPP D350-636-023 CHG 001

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Date :		Sequence #:		QTY Affected :		MRB (QSI042)	
Description Work Order Deviation				Disposition			
				Completed By			
				Lead hand / Supervisor			
				QC / QA Coordinator			
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread					
Other/Details:							

Job BOM					008833
Part / Item	Component Name	Quantity	Operation	Container	
D2600-3-BENT-LH	Extrusion Bent LH	1 pcs (1 ea)	90-Start up Operation	5129373	
D2744	Cap	1 pcs (1 ea)	90-Start up Operation	5060499	
D2739	350 I-Beam	1 pcs (1 ea)	160-Skiddtubes	5140949	
D2743	Crossbolt Spacer	8 pcs (8 ea)	160-Skiddtubes	5156521	
ALS4-1032-225	Rivnut	4 Ea (4 ea)	230-HandFinish	5059809	
AN3C34A	Bolt	1 Ea (1 ea)	230-HandFinish	5117121	
AN3C36A	Bolt	4 Ea (4 ea)	230-HandFinish	FM136658-1	
AN3C6A	Bolt	4 Ea (4 ea)	230-HandFinish	5142453	
AN6C44A	Bolt	4 Ea (4 ea)	230-HandFinish	5149188	
AN8C35A	Bolt	1 Ea (1 ea)	230-HandFinish	5112103	
D2745	Bushing	8 Ea (8 ea)	230-HandFinish	5137492	
D3488-3	Blade Fitting, LH	1 Ea (1 ea)	230-HandFinish	5148053	
D3631-1	Washer	8 pcs (8 ea)	230-HandFinish	5058407	
D3873-1	Bushing	7 pcs (7 ea)	230-HandFinish	5154066	
D4154-041	Wearplate Assembly	1 Ea (1 ea)	230-HandFinish	5173913	
D4170-1	Bushing	4 pcs (4 ea)	230-HandFinish	5137508	
D4171-1	Bushing	1 pcs (1 ea)	230-HandFinish	5142781	
MS21043-3	Nut	5 Ea (5 ea)	230-HandFinish	5099569	
MS21043-6	Nut	4 Ea (4 ea)	230-HandFinish	5149193	
MS21083C8	Nut	1 Ea (1 ea)	230-HandFinish	5104046	
NAS1149C0332R	Washer	4 Ea (4 ea)	230-HandFinish	5148666	
NAS1149C0363R	Washer	9 Ea (9 ea)	230-HandFinish	5135100	
NAS1149C0832R	Washer	1 Ea (1 ea)	230-HandFinish	5076017-2	
NAS1515H3L	Washer	4 Ea (4 ea)	230-HandFinish	5093559	
AN3C37A	Bolt	1 Ea (1 ea)	250-Packaging	5162124	
AN8C21A	Bolt	2 Ea (2 ea)	250-Packaging	5176381	
D2741	Replacement Blade	1 Ea (1 ea)	250-Packaging	5129315	
MS21083C8	Nut	2 Ea (2 ea)	250-Packaging	5167203	
NAS1149D0863J	Washer	2 Ea (2 ea)	250-Packaging	5166718	

Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D2600-3-BENT-LH	1	8	0
	D2744	1	5	0
	D2739	1	7	0
160-Skiddtubes	D2743	8	40	0
	ALS4-1032-225	4	816	0
	AN3C34A	1	12	0
230-HandFinish	AN3C36A	4	392	0
	AN3C6A	4	184	0
	AN6C44A	4	65	0
	AN8C35A	1	35	0
	D2745	8	130	0
	D3488-3	1	1	0
	D3631-1	8	329	0
	D3873-1	7	50	0
	D4154-041	1	0	0
	D4170-1	4	40	0
	D4171-1	1	16	0
	MS21043-3	5	805	0
	MS21043-6	4	91	0
	MS21083C8	1	63	0
	NAS1149C0332R	4	3,718	0
	NAS1149C0363R	9	687	0
	NAS1149C0832R	1	356	0
	NAS1515H3L	4	414	0
250-Packaging	AN3C37A	1	53	0
	AN8C21A	2	35	0
	D2741	1	54	0
	MS21083C8	2	63	0
	NAS1149D0863J	2	135	0

Entered: _____ Date: _____



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

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Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date : _____	Sequence #: _____	QTY Affected : _____		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					

Part Specifications

Specifications could not be found.

Plex 1/16/19 3:52 PM dart.white.jesse

Entered: _____ Date: _____



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

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Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By	
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				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐ ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled		FAULT CATEGORY ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					

QTY -041	QTY -042	QTY -043	QTY -044	QTY -051	QTY -052	P/N	DESCRIPTION
X						D4168-041	350 SKIDTUBE ASSEMBLY, LH
	X					D4168-042	350 SKIDTUBE ASSEMBLY, RH
		X				D4168-043	350 SKIDTUBE ASSEMBLY, LH
			X			D4168-044	350 SKIDTUBE ASSEMBLY, RH
				X		D4168-051	350 SKIDTUBE ASSEMBLY, LH
					X	D4168-052	350 SKIDTUBE ASSEMBLY, RH
1	1	1	1	1	1	D2739	WEB
8	8	8	8	8	8	D2743	CROSS BOLT SPACER
1	1	1	1	1	1	D2744	CAP
8	8	8	8	8	8	D2745	BUSHING
1		1		1		D3488-3	BLADE FITTING, LH
	1		1		1	D3488-4	BLADE FITTING, RH
4	4	4	4			D3490-1	CROSS BOLT SPACER
4	4					D3490-3	CROSS BOLT SPACER
		4	4			D3490-5	CROSS BOLT SPACER
8	8	8	8			D3492-041	PLUG ASSEMBLY
8	8					D3492-043	PLUG ASSEMBLY
		8	8			D3492-045	PLUG ASSEMBLY
8	8	8	8	8	8	D3631-1	WASHER
7	7	7	7	7	7	D3873-1	BUSHING
1	1	1	1	1	1	D4154-041	WEARPLATE ASSEMBLY
1						D4168-1	SKIDTUBE WELDMENT, LH
	1					D4168-2	SKIDTUBE WELDMENT, RH
		1				D4168-3	SKIDTUBE WELDMENT, LH
			1			D4168-4	SKIDTUBE WELDMENT, RH
				1		D4168-5	SKIDTUBE WELDMENT, LH
					1	D4168-6	SKIDTUBE WELDMENT, RH
4	4	4	4	4	4	D4170-1	SPACER
1	1	1	1	1	1	D4171-1	BUSHING
4	4	4	4	4	4	ALS4-1032-225	INSERT
1	1	1	1	1	1	AN3C34A	BOLT
4	4	4	4	4	4	AN3C36A	BOLT
4	4	4	4	4	4	AN3C6A	BOLT
4	4	4	4	4	4	AN8C44A	BOLT
1	1	1	1	1	1	AN8C35A	BOLT
5	5	5	5	5	5	MS21043-3	NUT
4	4	4	4	4	4	MS21043-6	NUT
1	1	1	1	1	1	MS21083C8	NUT
4	4	4	4	4	4	NAS1149C0332R	WASHER
9	9	9	9	9	9	NAS1149C0363R	WASHER
1	1	1	1	1	1	NAS1149C0832R	WASHER
4	4	4	4	4	4	NAS1515H3L	WASHER

NOTES:

- 1) MATERIAL: MAKE D4168-1/-2/-3/-4/-5/-6 FROM D2600-3 EXTRUSION (INITIAL LENGTH = 120.0).
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIOR TO INSTALLING D2739 WEB. STANDARD: PRIME (REF. 4.2.1.3.3) AND PAINT WHITE PER DART QSI 005 4.3. OPTIONAL: POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3. BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: D4168-041/-042/-043/-044 = 32.3 lbs
D4168-051/-052 = 31.9 lbs
- 8) WELD PER DART QSI 004
- 9) FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
MINIMUM YIELD TENSILE STRENGTH = 35 KSI
MINIMUM ULTIMATE TENSILE STRENGTH = 38 KSI
- 10) COAT ALL EXPOSED FASTENERS WITH LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS OFF FINISH WITH MEK DEGREASER.
- 11) SPACER AND PLUG INSTALLED SAME AS SECTION AJ-AJ EXCEPT HORIZONTAL
- 12) SPACER AND PLUG INSTALLED SAME AS SECTION AP-AP EXCEPT HORIZONTAL

C	ADDED -051/-052 (ZN D5-1 SHEETS 4, 15-16); ADDED D4168-5/6 (ZN B5-1, SHEETS 9, 10); D3488-3/4 REPLACES D3488-041/-042 (ZN C5-1, D2-11, D2-12, D2-13, D2-14); ADDED NOTES 13, 14 (ZN C4-1); NAS1149C0363R WAS AN960C10 (ZN A5-1, C8-11, C7-11, D8-11, C8-12, C7-12, D8-12, C8-13, C7-13, D8-13, C8-14, C7-14, D8-14); NAS1149C0332R WAS AN960C10L (ZN B1-11, B1-12, B1-13, B1-14); NAS1149C0832R WAS AN960C816L (ZN C1-11, C1-12, C1-13, C1-14)	ZF	18.03.01
B	ADD VIEW TO CONTROL FWD BEND ORIENTATION (ZN D-1/-4/-5/-6/-7); UPDATED FINISH OPTIONS. REASON: PAR13-276 AND NCR13-2757	MB	13.07.11
A	NEW ISSUE	SC	10.08.09
REV.	DESCRIPTION	BY	DATE
DESIGN	SC		
DRAWN	ZF		
CHECKED	MW		
MFG. APPR.	DD		
APPROVED	NO		
DE APPR.	DS		
DATE	18.03.01		

DART AEROSPACE USA, INC.
EUGENE, OR

DRAWING NO. **D4168** REV. C
SHEET 1 OF 18
TITLE **350 SKIDTUBE ASSEMBLY** SCALE NTS

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RELEASED

2018 OCT 19

2018 10-19

APPROVED

Entered: _____ Date: _____



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Description Work Order Deviation		Disposition		Completed By	
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				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					

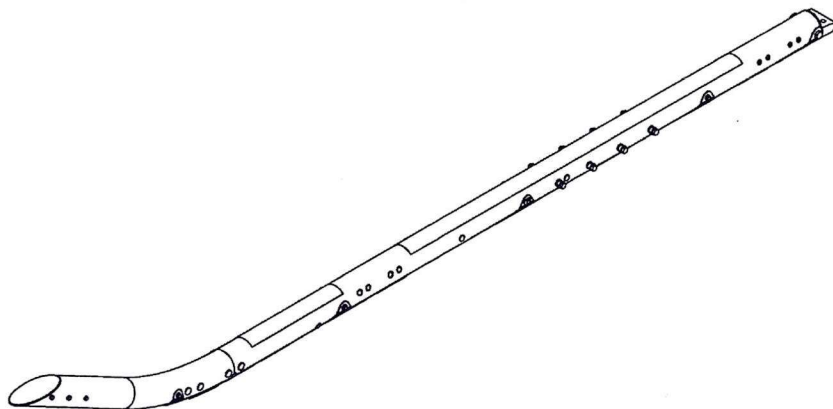
8 7 6 5 4 3 2 1

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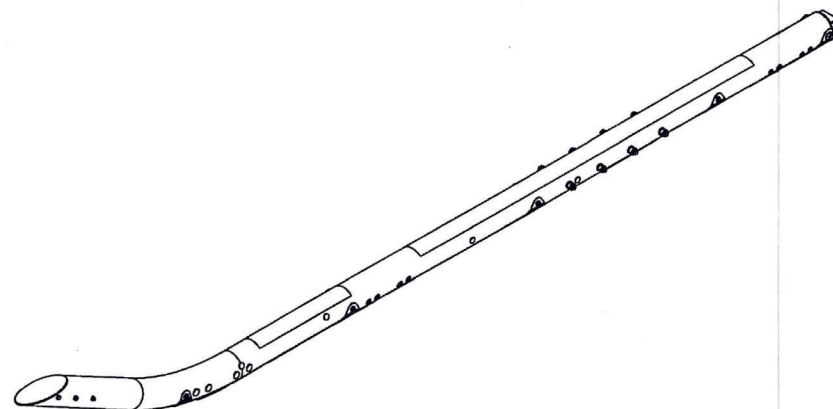
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D4168-041 350 SKIDTUBE ASSEMBLY, LH



D4168-042 350 SKIDTUBE ASSEMBLY, RH

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2018 OCT 19

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DESIGN	SC	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	ZF		
CHECKED	MW	DRAWING NO.	REV. C
MFG. APPR.	DD	D4168	SHEET 2 OF 16
APPROVED	NO	TITLE	SCALE
DE APPR.	DS	350 SKIDTUBE ASSEMBLY	NTS
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8 7 6 5 4 3 2 1

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Entered: _____ Date: _____



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐ ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled		FAULT CATEGORY ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					

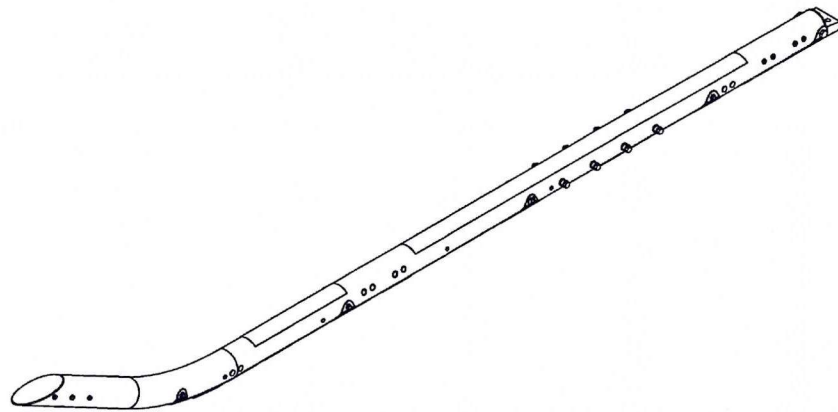
8 7 6 5 4 3 2 1

D

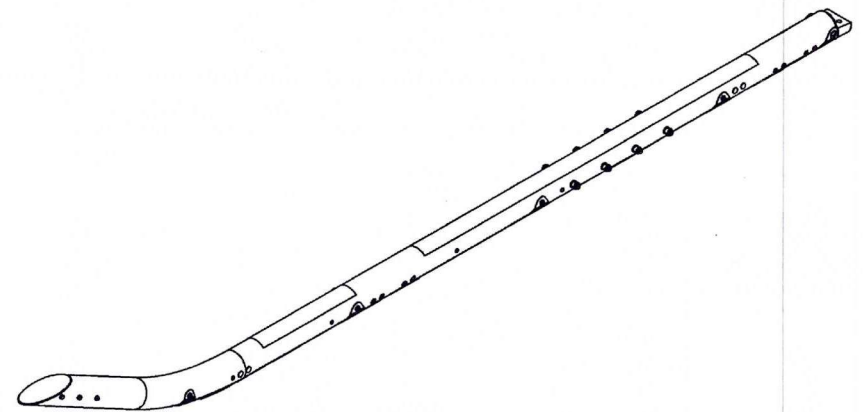
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D4168-043 350 SKIDTUBE ASSEMBLY, LH



D4168-044 350 SKIDTUBE ASSEMBLY, RH

RELEASED

2018 OCT 19

APPROVED

DESIGN	SC	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	ZF		
CHECKED	MW	DRAWING NO.	REV. C
MFG. APPR.	DD	D4168	SHEET 3 OF 16
APPROVED	NO	TITLE	SCALE
DE APPR.	DS	350 SKIDTUBE ASSEMBLY	NTS
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8 7 6 5 4 3 2 1

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B

A

Entered: _____ Date: _____



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QS1042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐ ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread		FAULT CATEGORY Other/Details:			

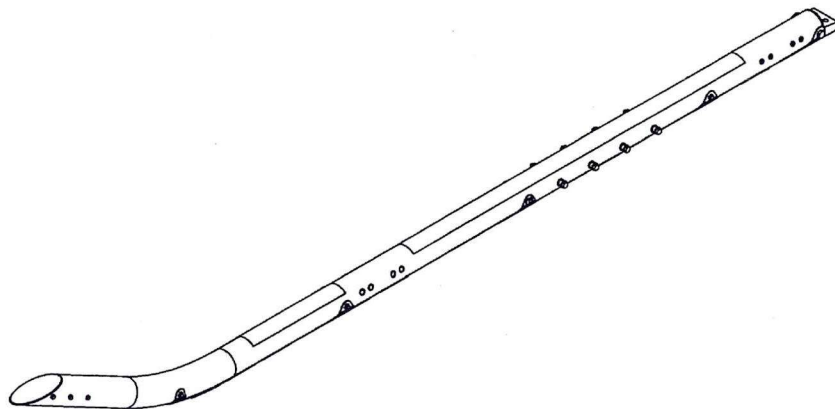
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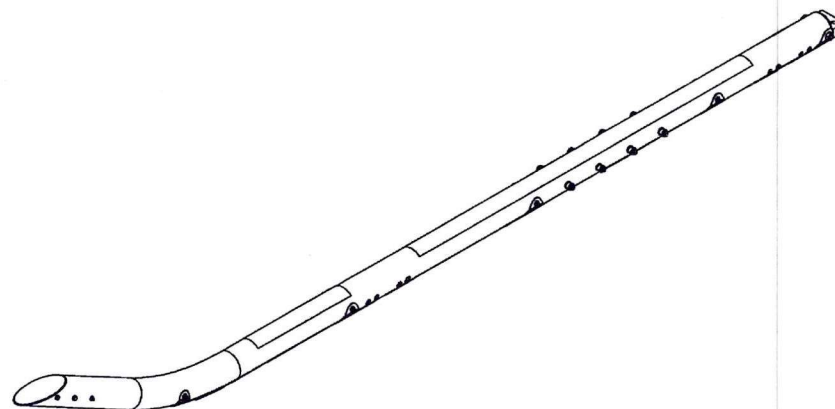
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D4168-051 350 SKIDTUBE ASSEMBLY, LH



D4168-052 350 SKIDTUBE ASSEMBLY, RH

RELEASED
2019 OCT 19

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DESIGN	SC	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	ZF		
CHECKED	MW	DRAWING NO.	REV. C
MFG. APPR.	DD	D4168	SHEET 4 OF 16
APPROVED	NO	TITLE	SCALE
DE APPR.	DS	350 SKIDTUBE ASSEMBLY	NTS
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8 7 6 5 4 3 2 1

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C

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Entered: _____ Date: _____

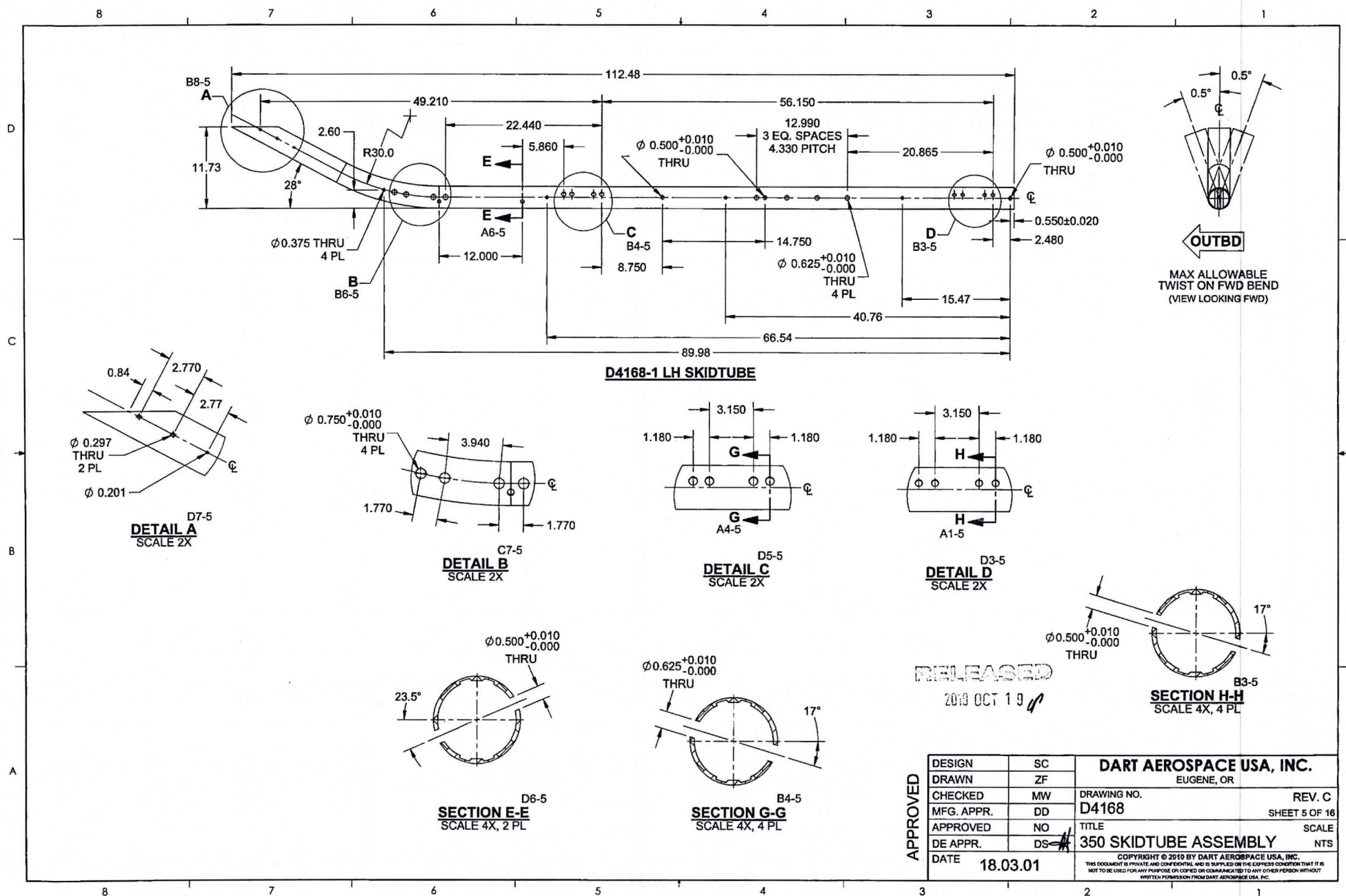


WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐ ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread		Other/Details:			



Entered: _____ Date: _____

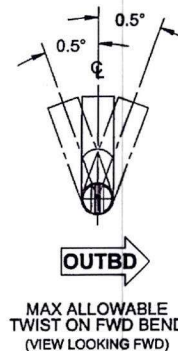
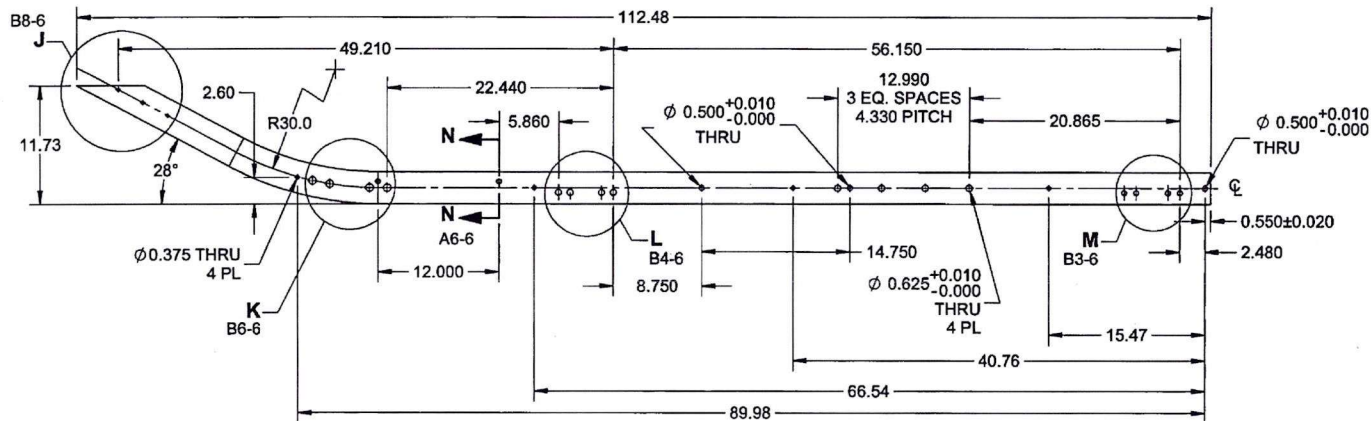


WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

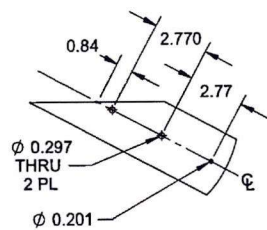
NCR No. _____

Route update only ☐

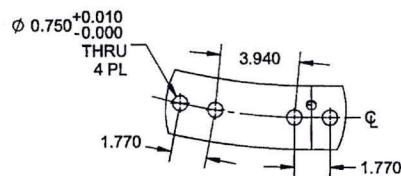
Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QS1042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					



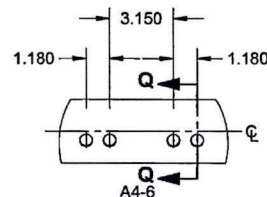
D4168-2 RH SKIDTUBE



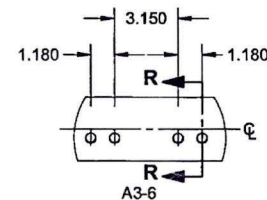
DETAIL J
SCALE 2X



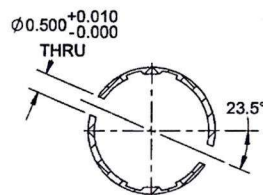
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SCALE 2X



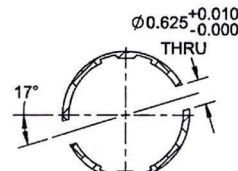
DETAIL L
SCALE 2X



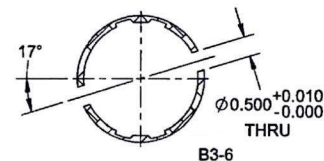
DETAIL M
SCALE 2X



SECTION N-N
SCALE 4X, 2 PL



SECTION Q-Q
SCALE 4X, 4 PL



SECTION R-R
SCALE 4X, 4 PL

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2010 OCT 19

APPROVED

DESIGN	SC
DRAWN	ZF
CHECKED	MW
MFG. APPR.	DD
APPROVED	NO
DE APPR.	DS
DATE	18.03.01

DART AEROSPACE USA, INC.
EUGENE, OR

DRAWING NO. D4168	REV. C SHEET 6 OF 16
TITLE 350 SKIDTUBE ASSEMBLY	SCALE NTS

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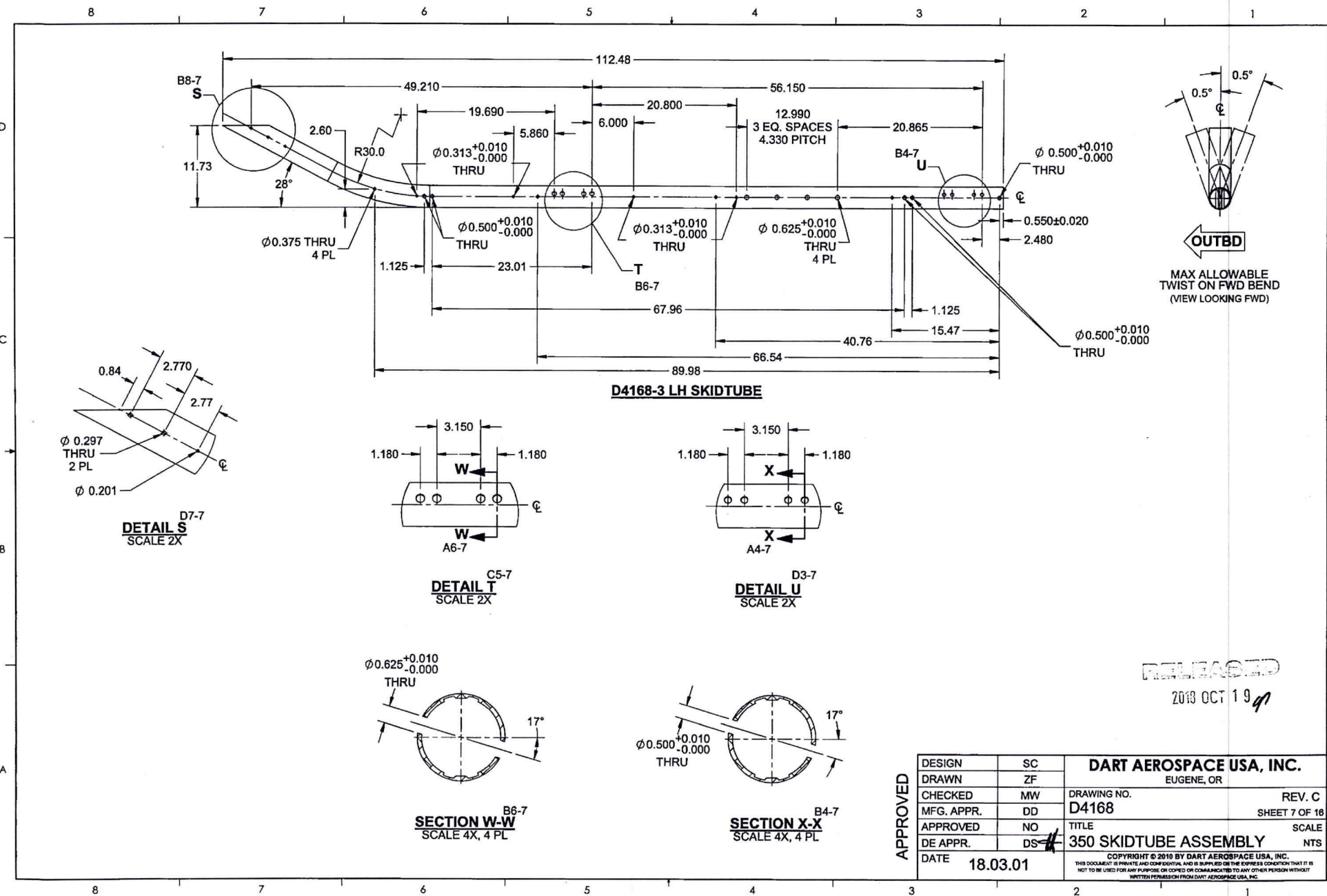


WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QS1042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					



Entered: _____ Date: _____

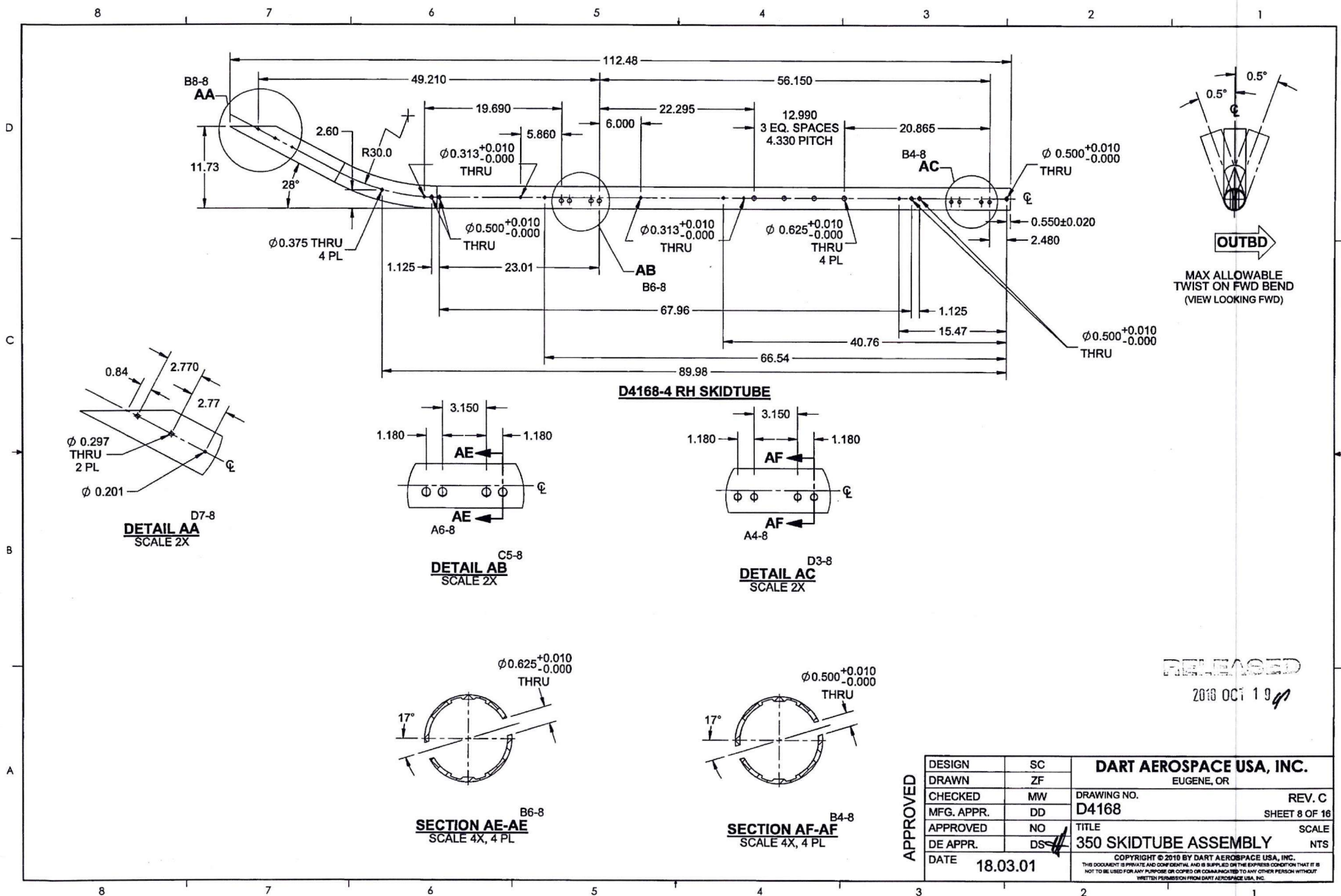


WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					



DESIGN	SC	DART AEROSPACE USA, INC.	
DRAWN	ZF	EUGENE, OR	
CHECKED	MW	DRAWING NO.	REV. C
MFG. APPR.	DD	D4168	SHEET 8 OF 16
APPROVED	NO	TITLE	SCALE
DE APPR.	DSS	350 SKIDTUBE ASSEMBLY	NTS
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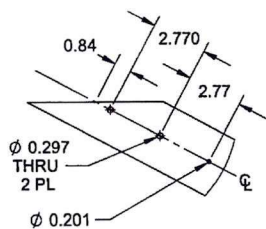
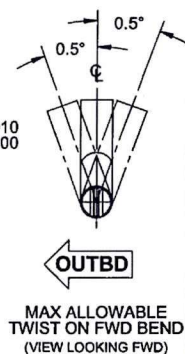
WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

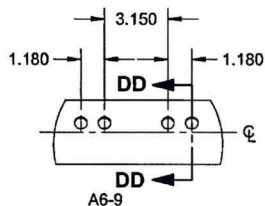
Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐ ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled		FAULT CATEGORY ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					

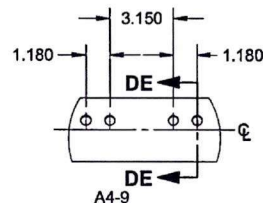
D4168-5 LH SKIDTUBE



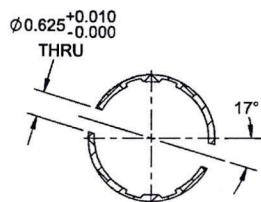
DETAIL DA
SCALE 2X



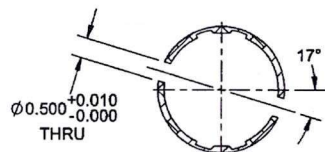
DETAIL DB
SCALE 2X



DETAIL DC
SCALE 2X



SECTION DD-DD
SCALE 4X, 4 PL



SECTION DE-DE
SCALE 4X, 4 PL

APPROVED

DESIGN	SC
DRAWN	ZF
CHECKED	MW
MFG. APPR.	DD
APPROVED	NO
DE APPR.	DS
DATE	18.03.01

DART AEROSPACE USA, INC.
EUGENE, OR

DRAWING NO.	REV. C
D4168	SHEET 9 OF 16
TITLE	SCALE
350 SKIDTUBE ASSEMBLY	NTS

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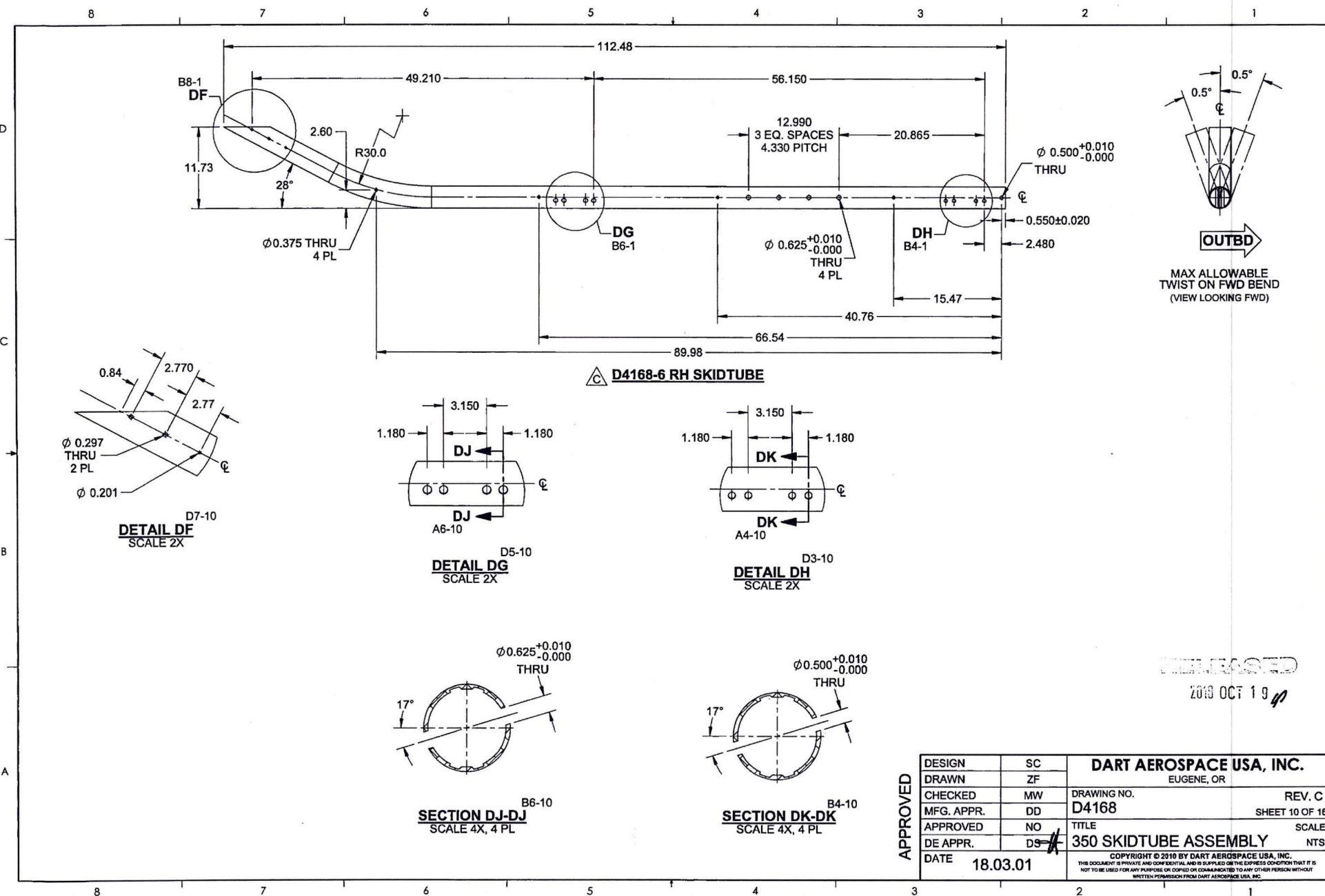


WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date : _____	Sequence #: _____	QTY Affected : _____		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
				QC / QA Coordinator	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					



Entered: _____ Date: _____

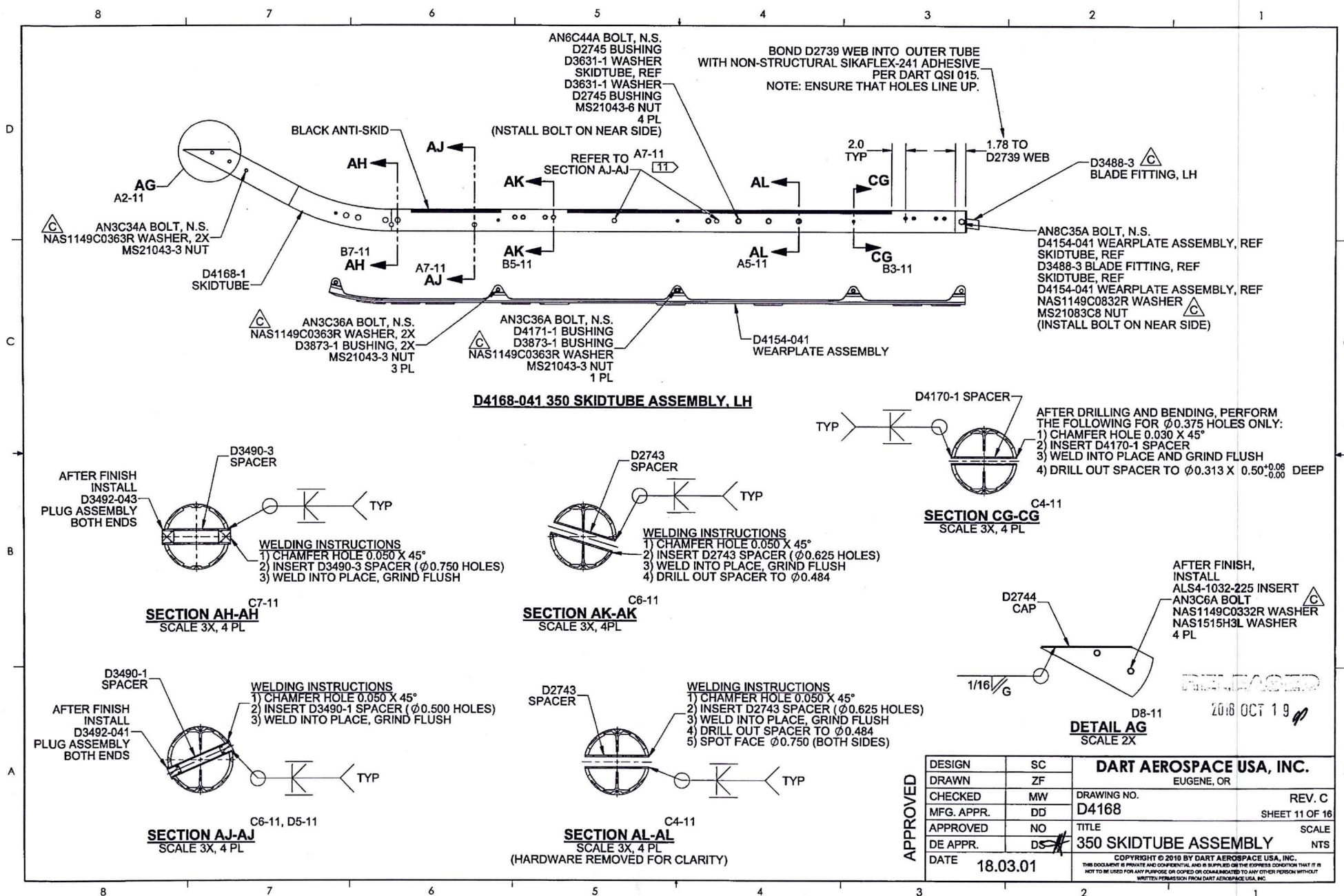


WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QSI042)	
Description Work Order Deviation			Disposition		
			Completed By		
			Lead hand / Supervisor		
			QC / QA Coordinator		
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					



Entered: _____ Date: _____

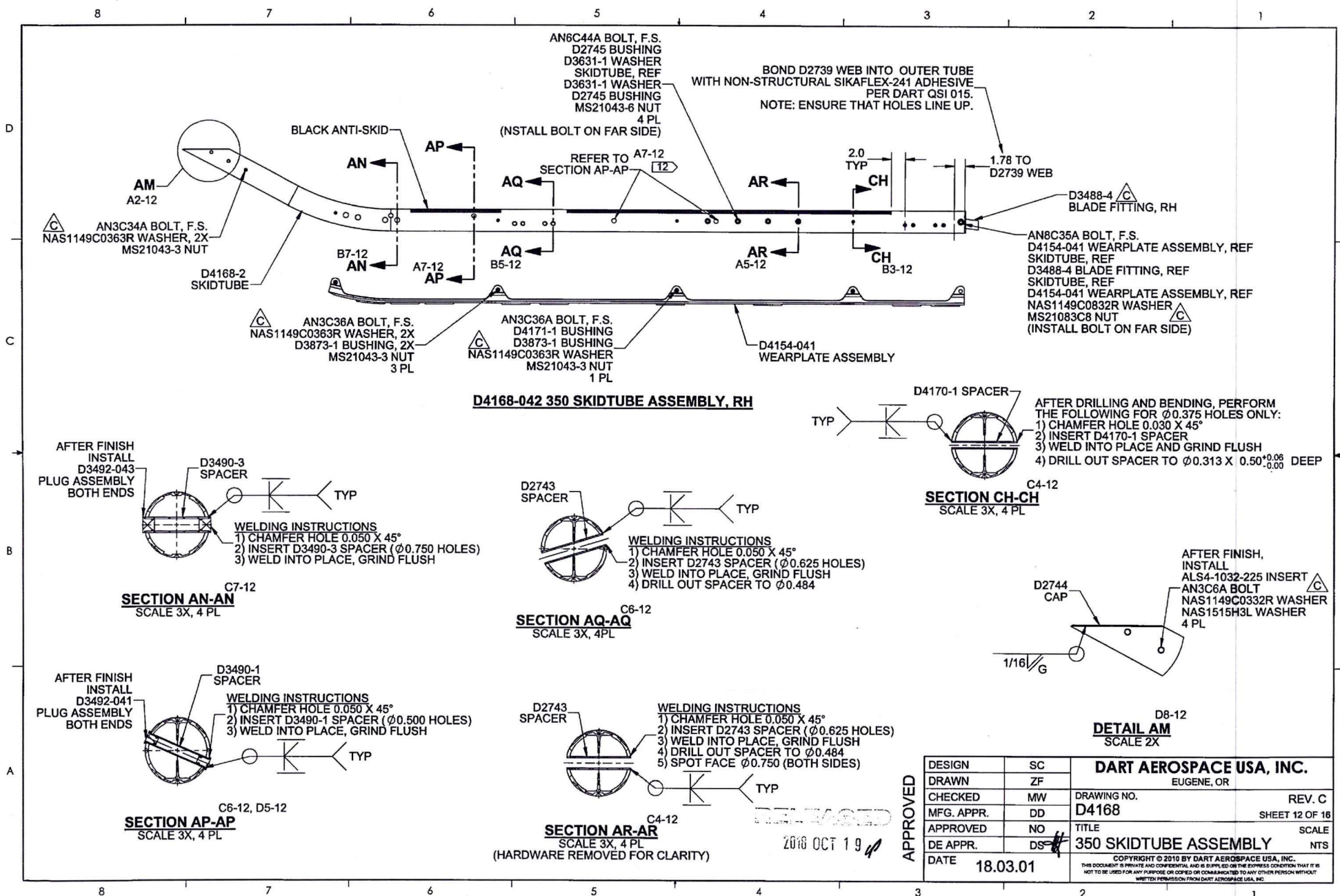


WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐ ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled		FAULT CATEGORY ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					



Entered: _____ Date: _____

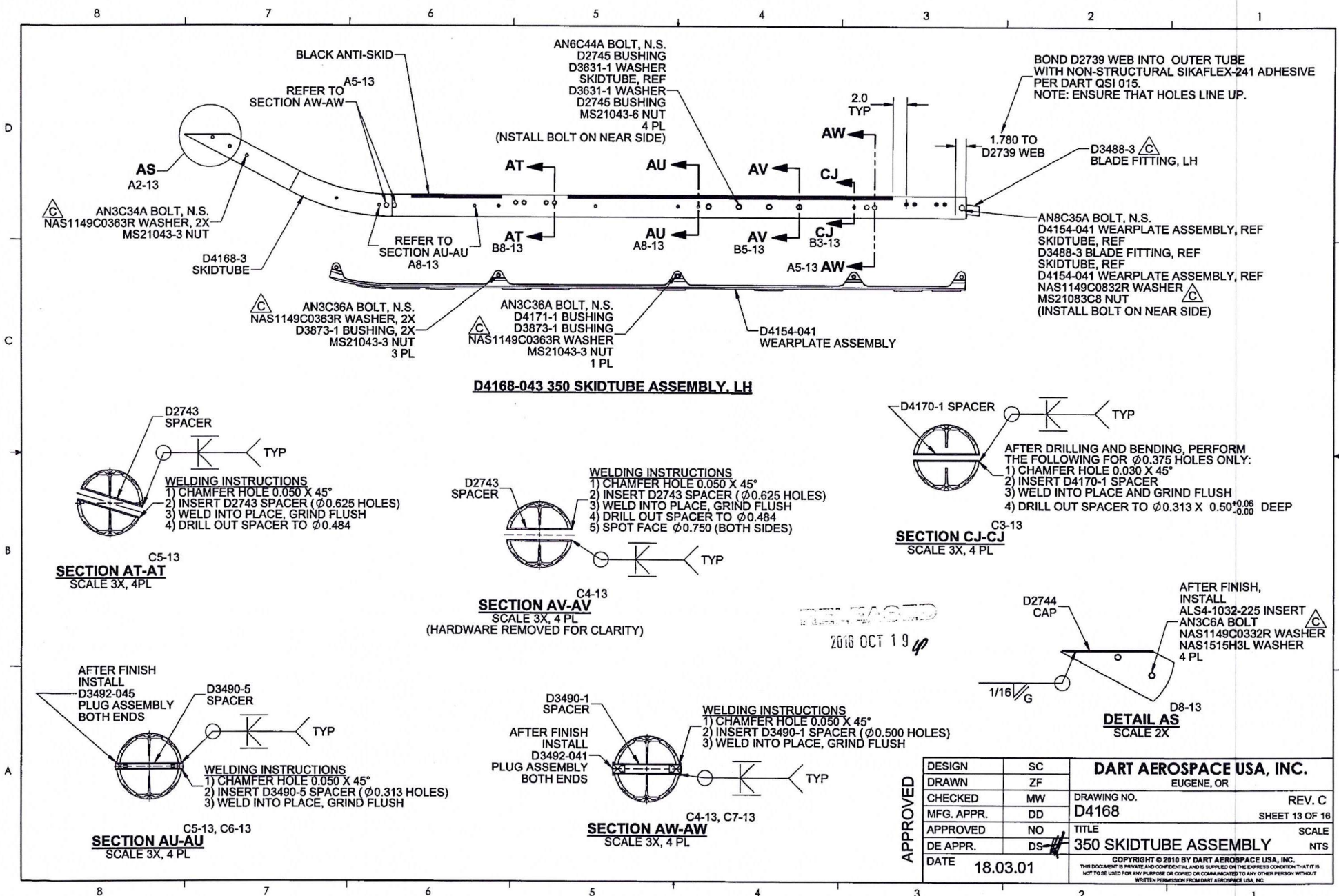


WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

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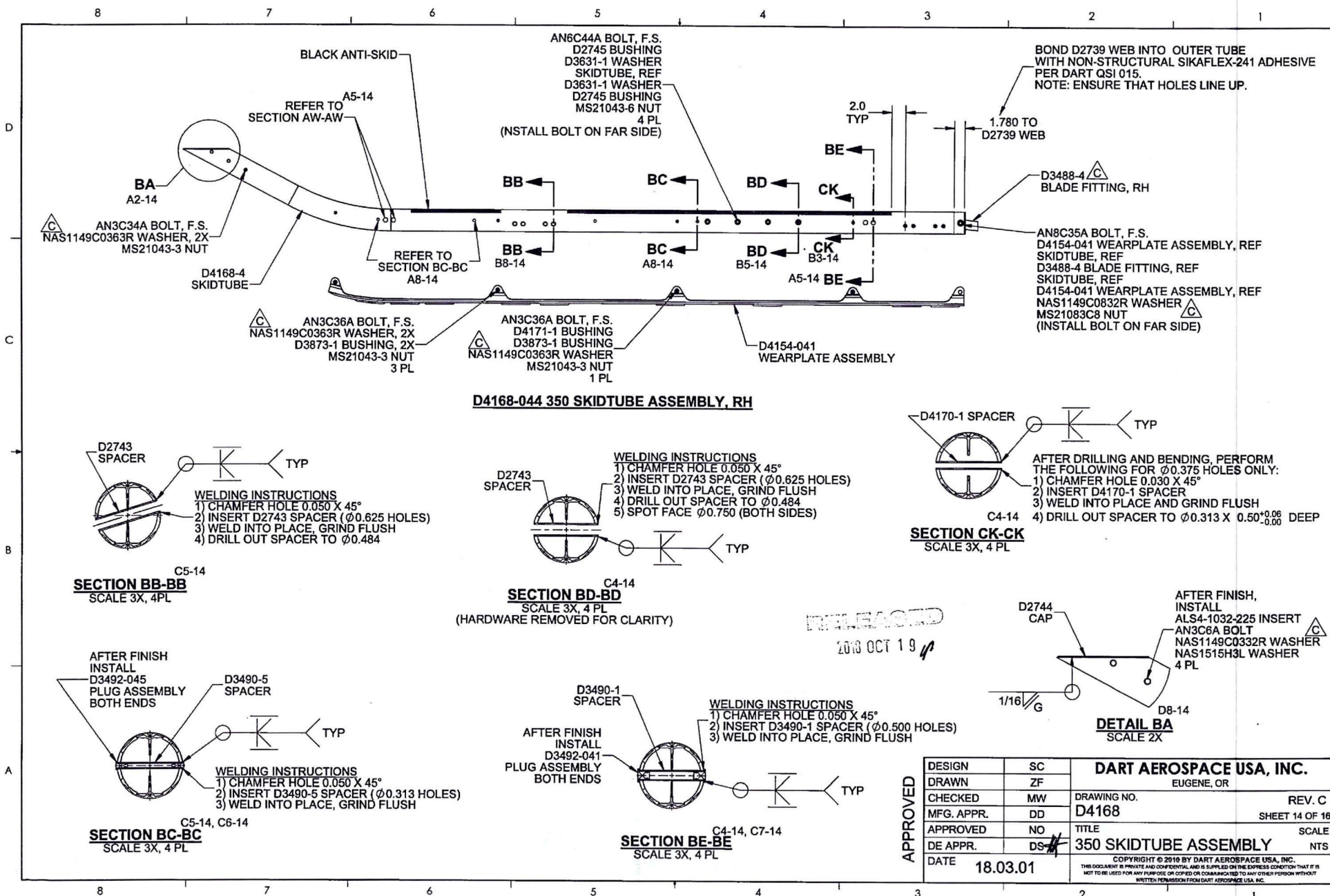


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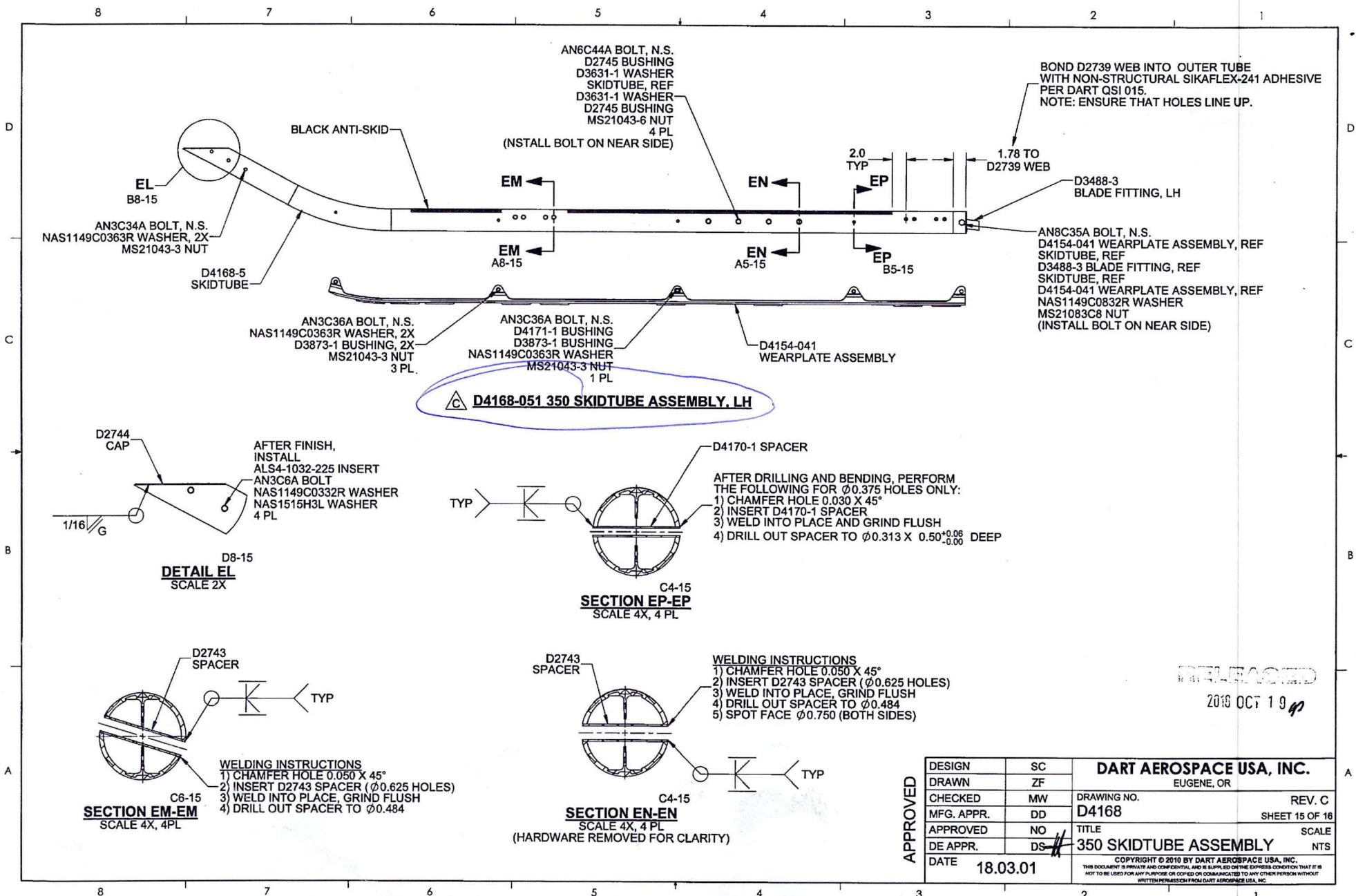


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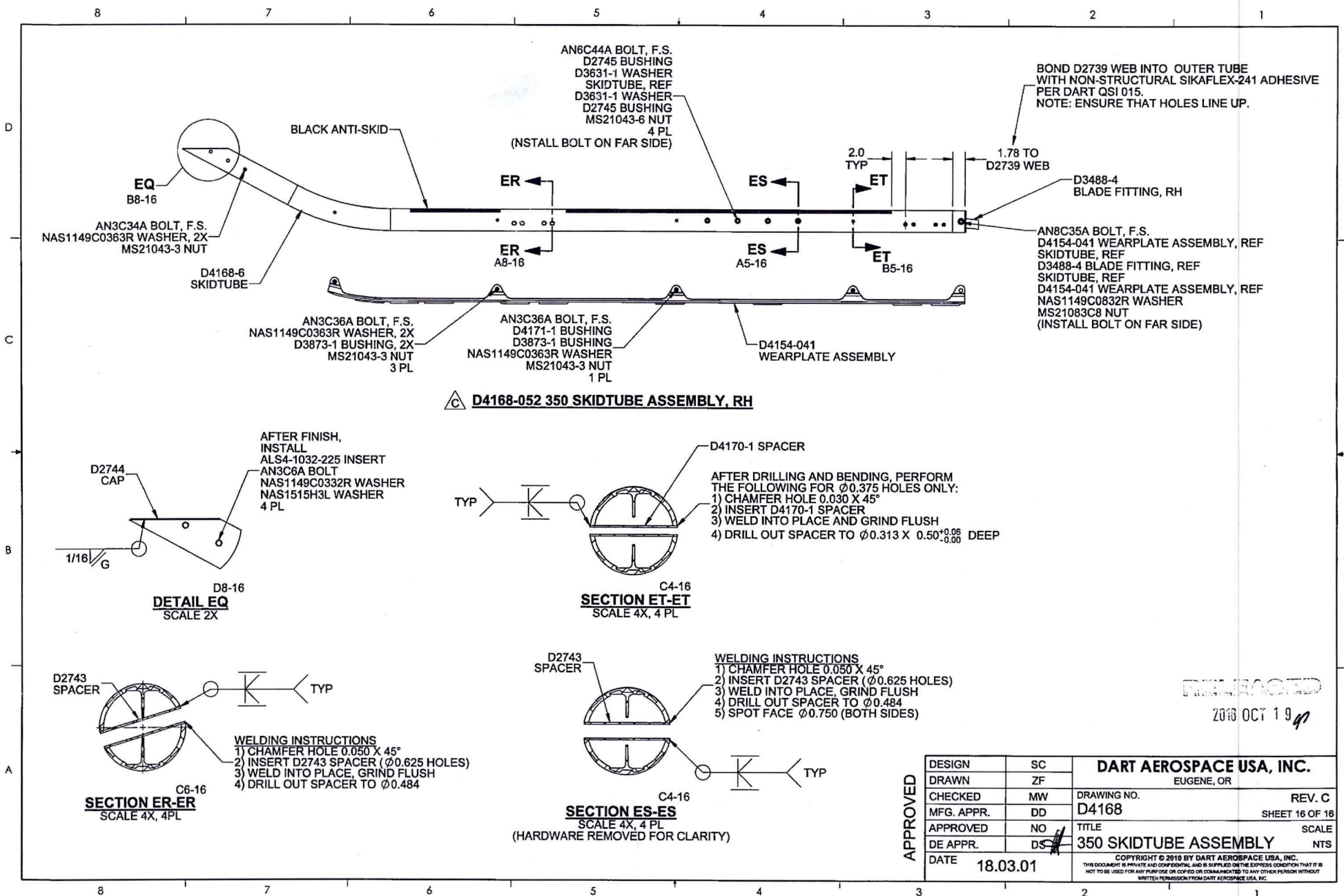


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Other/Details:					

Change Record

PAGE 1 OF 1

Part Number: D350-636-023/-024

Description: SKIDTUBE INSTALLATION LH/RH, STD COMPATIBLE W/TRAINING WEARPLATI

[illegible]